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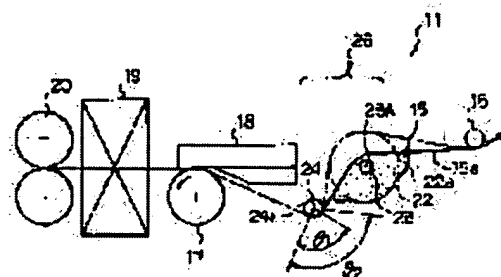
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(54) DECURLING DEVICE

(57)Abstract:

PURPOSE: To provide good decurling effect at all times irrespective of the dia. of a roll of recording sheet by increasing the amount of deformation of a resilient member proportioning to the load generated when the recording sheet is drawn out, inverting and curving the sheet with a decurling member, and thereby removing the curl of the sheet.

CONSTITUTION: When a recording sheet 15 is drawn out of a roll, not illustrated, and transported by a transport roller 17, the amount of curl of the sheet 15 is small but the weight of the roll is large as long as the roll dia. remains large, so that the recording sheet 15 bears a large back tension. This results in a large deformation amount of a rubber roller 22 and small angle θ_1 of sheet winding on a decurling roller 24. When the roll dia. becomes small, the back tension lessens to cause enlargement of the winding angle θ_2 . The decurling effect is higher with increasing winding angle θ . Because the angles θ_1 , θ_2 can be enlarged according to the curling amount



of the recording sheet 15, good decurling effect is obtained at all times.

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CLAIMS

[Claim(s)]

[Claim 1] In the DEKARU equipment which is formed in the improvement style side in how to pull out the recording paper of the conveyance means which pulls out the recording paper which was rolled in the shape of a roll and curled toward the inside of space, engages with the aforementioned recording paper, and has a DEKARU means except the aforementioned curl of the recording paper The elastic member which guides the aforementioned recording paper which the aforementioned DEKARU means was pulled out and curled inside, and has the periphery section which can deform in contact with the inside of the aforementioned recording paper, When it has the DEKARU member which has the curve side which it is prepared [side] between the aforementioned elastic member and the aforementioned conveyance means, and reverses the recording paper in contact with the superficies of the aforementioned recording paper and cash-drawer addition of the recording paper becomes large, DEKARU equipment characterized by making it deformation of the periphery section of the aforementioned elastic member become large, carrying out the reversal curve of the recording paper, and removing curl.

[Claim 2] The aforementioned elastic member is DEKARU equipment according to claim 1 characterized by the bird clapper from a sponge member.

[Claim 3] The aforementioned elastic member is DEKARU equipment according to claim 1 or 2 characterized by the bird clapper from the member which has conductivity.

[Claim 4] The aforementioned elastic member is DEKARU equipment according to claim 1, 2, or 3 characterized by being the roller which has an axial center in the direction of paper width of the aforementioned recording paper.

[Claim 5] The aforementioned roller is DEKARU equipment according to claim 4 characterized by the outer diameter of the direction center section of paper width of the aforementioned recording paper being larger than the outer diameter of both ends.

[Claim 6] In the DEKARU equipment which has a DEKARU means except curl of the aforementioned recording paper which curled toward the inside of the space of the recording paper pulled out by the anterior from the attachment component holding a recording paper roll The energization member which presses the recording paper roll with which the aforementioned DEKARU means was prepared in the flank of this attachment component to shaft orientations, DEKARU equipment characterized by being prepared in the anterior of the pars basilaris ossis occipitalis of the aforementioned attachment component possible [attachment and detachment to the recording paper roll down side], having the koro which has an axial center almost parallel to a recording paper roll, and changing the cash-drawer load of the aforementioned recording paper.

[Claim 7] DEKARU equipment which is formed in the improvement style side in how to pull out the recording paper of the conveyance means which pulls out the recording paper which was rolled in the shape of [which is characterized by providing the following] a roll, and curled toward the inside of space, engages with the aforementioned recording paper, and has a DEKARU means except the aforementioned curl of the recording paper The aforementioned DEKARU means is a turn roller which

guides the aforementioned recording paper which was pulled out and curled inside the recording paper in contact with the inside of the aforementioned recording paper. DEKARU which has the curve side which it is prepared [side] between this turn roller and the aforementioned conveyance means, and makes the outside of the recording paper reverse the recording paper in contact with the superficies of the aforementioned recording paper -- a member DEKARU operation which the aforementioned DEKARU member pulls out the aforementioned recording paper, and is reversed near ***** and the aforementioned DEKARU means -- the time of a halt -- aforementioned DEKARU -- the DEKARU release means to which the aforementioned DEKARU member is moved from the DEKARU active position which carries out the aforementioned DEKARU operation of a member

[Claim 8] The aforementioned DEKARU equipment is DEKARU equipment according to claim 7 characterized by having the guide member which it shows to the inoperative position which does not carry out the aforementioned DEKARU operation from the aforementioned DEKARU active position while having the attaching part in which maintenance and secession are possible for the aforementioned DEKARU member in the aforementioned DEKARU active position.

[Claim 9] The aforementioned DEKARU equipment is DEKARU equipment according to claim 7 or 8 characterized by having a driving force intermittence means to transmit and intercept the driving force of the aforementioned conveyance means for the aforementioned DEKARU release means.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] this invention relates to DEKARU equipment, for example, the DEKARU equipment from which curl of the recording paper of the recording device which uses the roll-like recording paper is removed.

[0002]

[Description of the Prior Art] There is a thing as shown in drawing 12 (a) indicated by JP,2-40551,U and (b) as conventional DEKARU equipment, for example. The DEKARU equipment 1 shown in drawing 12 (a) forms the DEKARU shaft (cover-printing shaft) 5 which moves to the run way of the recording paper 4 which pulls out the recording paper 4 from the stowage container 3 which contains the recording paper roll 2 up and down.

[0003] Moreover, there is also DEKARU equipment 6 as shown in drawing 12 (c) indicated by JP,2-147549,A as conventional DEKARU equipment. The same sign is attached to the same composition as the DEKARU equipment shown in above-mentioned drawing 12 (a). The arm 8 which DEKARU equipment 6 supports the guide shaft 7 and the guide shaft 7 which are rotated by the size of the diameter of a roll of the recording paper roll 2, and is rotated focusing on shaft 8A. It has the gearmotor connected through the clutch prepared in the shaft 8A edge, and the contact angle theta made to the DEKARU shaft 5 of the recording paper 4 is changed with the tension and the power from a motor which join the recording paper 4, and it constitutes so that the DEKARU effect of removing curl of the recording paper 4 may be taken out.

[0004] Moreover, there is a thing as shown in drawing 13 indicated by JP,1-57019,B as conventional DEKARU equipment. The same sign is attached to the same composition as the DEKARU equipment shown in above-mentioned drawing 12 (a). The DEKARU equipment 9 shown in drawing 13 always forces the DEKARU shaft 5 on the recording paper 4 pulled out from the recording paper roll 2.

[0005]

[Problem(s) to be Solved by the Invention] however, although there is the DEKARU effect by drawing the recording paper 4 through in the reversal direction by the DEKARU shaft 5 when the diameter of a roll of the recording paper roll 2 of the DEKARU equipment 1 shown in drawing 12 (a) is large, if it is in such conventional technology, there is a trouble which will say if the DEKARU effect will become small if the path of the recording paper roll 2 becomes small, and sufficient DEKARU effect is not acquired by the size of the path of the recording paper roll 2

[0006] Moreover, although the DEKARU equipment 6 shown in drawing 12 (c) is for solving such a fault, since a back tension becomes very small to a degree when the diameter of a roll is small, the good DEKARU effect is not acquired. Furthermore, there is a trouble that the mechanism for taking out the DEKARU effect becomes intricately and expensive. Moreover, since, as for the DEKARU equipment 9 shown in drawing 13, the DEKARU shaft 5 is always pressing the recording paper 4, When a recording device does not operate but it is in a standby state, in order that the DEKARU shaft 5 may continue pressing the recording paper 4, It bends as the path of **** and kink ***** standby **** sticks,

with much trouble, even if it corrects curl of the recording paper 4 of the recording paper roll 2, standby **** remains, and the recording paper 4 has the trouble that the so-called troublesome standby curl occurs on the 1st recording paper 4 after standby.

[0007] By making this invention against the background of such conventional technology, and using deformation of an elastic member By being able to acquire the DEKARU effect always good irrespective of the size of the path of a recording paper roll, and using an elastic member as sponge By being made to a low cost, removing static electricity generated when the recording paper is further drawn through by making an elastic member into conductivity, and using an elastic member as a roller further again It can prevent that Siwa occurs on the recording paper. cover printing when being able to reduce a friction load and a drawer load and drawing the recording paper through by considering as the roller of a drum configuration further again -- members -- a bowl -- Further again by preparing an energization member and the koro in the stowage container of a recording paper roll By being able to adjust the cash-drawer load of the recording paper cheaply suitably, and establishing a DEKARU release means further again By moving a DEKARU member to an inoperative position at the time of a halt of DEKARU operation, being made to the good recording paper without the curl of the 1st sheet after standby, and preparing the guide member to which it shows a DEKARU member except for standby **** of the recording paper, further again Even if the tension of the recording paper changes, a cover-printing angle can be held uniformly and it aims at offering the DEKARU equipment which can make the driving source of exclusive use unnecessary by establishing a driving force intermittence means to transmit and intercept the driving force of a conveyance means further again.

[0008]

[Means for Solving the Problem] Invention according to claim 1 is prepared in the improvement style side in how to pull out the recording paper of the conveyance means which pulls out the recording paper which was rolled in the shape of a roll and curled toward the inside of space. In the DEKARU equipment which engages with the aforementioned recording paper and has a DEKARU means except the aforementioned curl of the recording paper the aforementioned DEKARU means The elastic member which guides the aforementioned recording paper which was pulled out and curled inside, and has the periphery section which can deform in contact with the inside of the aforementioned recording paper, When it has the DEKARU member which has the curve side which it is prepared [side] between the aforementioned elastic member and the aforementioned conveyance means, and reverses the recording paper in contact with the superficies of the aforementioned recording paper and the cash-drawer load of the recording paper becomes large, It is characterized by making it deformation of the periphery section of the aforementioned elastic member become large, carrying out the reversal curve of the recording paper, and removing curl.

[0009] As for the aforementioned elastic member, in addition to composition according to claim 1, invention according to claim 2 is characterized by the bird clapper from a sponge member. In addition to composition according to claim 1 or 2, invention according to claim 3 is characterized by the bird clapper by the aforementioned elastic member from the member which has conductivity. In addition to composition according to claim 1, 2, or 3, invention according to claim 4 is characterized by the aforementioned elastic member being a roller which has an axial center in the direction of paper width of the aforementioned recording paper.

[0010] In addition to composition according to claim 4, invention according to claim 5 is characterized by the aforementioned roller having the outer diameter of the direction center section of paper width of the aforementioned recording paper larger than the outer diameter of both ends. In the DEKARU equipment which has a DEKARU means except curl of the aforementioned recording paper which curled toward the inside of the space of the recording paper pulled out by the anterior from the attachment component to which invention according to claim 6 holds a recording paper roll The energization member which presses the recording paper roll with which the aforementioned DEKARU means was prepared in the flank of this attachment component to shaft orientations, It is prepared in the anterior of the pars basilaris ossis occipitalis of the aforementioned attachment component possible [attachment and detachment to the recording paper roll down side], has the koro which has an axial

center almost parallel to a recording paper roll, and is characterized by changing the cash-drawer load of the aforementioned recording paper.

[0011] Invention according to claim 7 is prepared in the improvement style side in how to pull out the recording paper of the conveyance means which pulls out the recording paper which was rolled in the shape of a roll and curled toward the inside of space. In the DEKARU equipment which engages with the aforementioned recording paper and has a DEKARU means except the aforementioned curl of the recording paper the aforementioned DEKARU means The turn roller which guides the aforementioned recording paper which was pulled out and curled inside the recording paper in contact with the inside of the aforementioned recording paper, The DEKARU member which has the curve side which it is prepared [side] between this turn roller and the aforementioned conveyance means, and makes the outside of the recording paper reverse the recording paper in contact with the superficies of the aforementioned recording paper, DEKARU operation which the aforementioned DEKARU member pulls out the aforementioned recording paper, and is reversed near ***** and the aforementioned DEKARU means at the time of a halt aforementioned DEKARU -- it is characterized by establishing the DEKARU release means to which the aforementioned DEKARU member is moved from the DEKARU active position which carries out the aforementioned DEKARU operation of a member

[0012] As for the aforementioned DEKARU equipment, invention according to claim 8 is characterized by having the guide member which it shows to the inoperative position which does not carry out the aforementioned DEKARU operation from the aforementioned DEKARU active position while it has the attaching part in which maintenance and secession are possible for the aforementioned DEKARU member in the aforementioned DEKARU active position. As for the aforementioned DEKARU equipment, this invention according to claim 9 is characterized by having a driving force intermittence means to transmit and intercept the driving force of the aforementioned conveyance means for the aforementioned DEKARU release means.

[0013]

[Function] In invention according to claim 1, since reversal and the DEKARU member to incurvate are prepared in contact with the superficies of the elastic member which deforms in contact with the inside of the recording paper which was pulled out and curled, and the recording paper, the diameter of a roll of a recording paper roll is large, when curl is small, the weight of a recording paper roll is large, and the back tension when pulling out a recording paper roll becomes large. For this reason, the deformation of an elastic member is large and the circumference of the recording paper which contacts to the DEKARU member at the time of reversal becomes small.

[0014] On the other hand, the diameter of a roll is small, when curl is large, the weight of a recording paper roll is small, and the back tension when pulling out a recording paper roll becomes small. For this reason, the deformation of an elastic member is small and the circumference of the recording paper which contacts to the DEKARU member at the time of reversal becomes large. invention according to claim 2 -- an elastic member -- sponge -- since it is a member -- lightweight -- a member -- an amount becomes little

[0015] In invention according to claim 3, since an elastic member has conductivity, generated static electricity discharges through an elastic member. In invention according to claim 4, since an elastic member is a roller, according to movement of the recording paper, an elastic member is taken, and carries out the surroundings, the friction load between the recording paper and an elastic member reduces it, and a cash-drawer load reduces it.

[0016] Since the outer diameter of the shaft-orientations center section of the roller is larger than the outer diameter of both ends, although the cash-drawer load of the recording paper is large and a DEKARU member is bent by invention according to claim 5, the recording paper passing through a roller center section passes by it along a DEKARU member, while the tension extended from a center section to a both-ends side works. Since the attachment component holding a recording paper roll is prepared in a flank in invention according to claim 6 and the energization member is prepared in the koro by the anterior of a pars basilaris ossis occipitalis, a recording paper roll is always energized by shaft orientations, and it is made to float recording paper curl by the koro. for this reason -- if a medium

is small from from, it is about 1 law and the diameter of a roll becomes small according to this synergistic effect, when the diameter of a roll of a back tension is large -- a recording paper roll -- the koro -- an anterior -- moving -- from the koro -- separating -- on the other hand -- energization -- a back tension increases according to the effect of a member

[0017] since a DEKARU release means to move a DEKARU member near the DEKARU means at the time of a halt of DEKARU operation is established in invention according to claim 7 -- DEKARU -- if DEKARU operation of a member stops, a DEKARU release means will move a DEKARU member from a DEKARU active position For this reason, DEKARU operation of the recording paper will not be carried out. since the guide member is prepared in invention according to claim 8 -- a DEKARU member -- a guide -- if held at the attaching part of a member -- a DEKARU active position -- becoming -- fixed DEKARU operation -- nothing -- if it secedes from an attaching part and shows around on the other hand in an inoperative position, a DEKARU member will not carry out DEKARU operation

[0018] In invention according to claim 9, since DEKARU equipment has the driving force intermittence means, the driving force of a conveyance means minds a driving force intermittence means, and is transmitted or intercepted by the DEKARU release means. For this reason, by controlling a driving force intermittence means suitably, it is intermittent in driving force if needed, and a DEKARU release means can be operated.

[0019]

[Example] Hereafter, the example of this invention is explained based on a drawing. Drawing 1 and 2 are drawings showing the 1st example of the DEKARU equipment concerning the claims 1-4 of this invention, and are the case where it applies to the Records Department of facsimile apparatus. First, composition is explained. In drawing 1, 11 is DEKARU equipment and DEKARU equipment 11 is formed in Records Department 10a of facsimile apparatus 10. The roll-sheet electrode holder 13 which holds the recording paper roll 12 which that of facsimile apparatus 10 is the same as that of the usual thing except DEKARU equipment 11, and was rolled in the shape of a roll, The conveyance roller 17 which is a conveyance means to pull out and convey through the guide idler 16 and the DEKARU equipment 11 to which it shows the recording paper 15 from the roll-sheet electrode holder 13, It has the thermal head 18 prepared so that the recording paper 15 might carry out a pressure welding to the conveyance roller 17 bottom, the cutter 19 prepared in the downstream of a thermal head 18, and the discharge roller 20 which discharges the cut recording paper 15. the recording paper 15 pulled out from the recording paper roll 12 -- the shape of a roll -- a volume -- the price -- **** -- a volume -- a kink -- attaching -- the inside 15a side inside space -- going -- curving -- being the so-called -- it has curled

[0020] DEKARU equipment 11 is equipped with the rubber roller 22 which is the elastic member of the shape of sponge which has the conductivity prepared in the direction upstream of a drawer of the recording paper 15 of the conveyance roller 17. The rubber roller 22 guided the recording paper 15 which was pulled out from the roll-sheet electrode holder 13, and was guided by the guide idler 16 in the direction which curves toward the inside of the recording paper 15, had periphery section 22a which can deform in contact with inside 15a of the recording paper 15, and has connected it to the ground of the main part of equipment. Moreover, a rubber roller 22 is a roller supported free [rotation] by the shaft 23 which has axial center 23A in the direction of paper width of the recording paper 15. In addition, the rubber roller 22 of your being the rubber block which has the periphery section in which mere deformation is possible is natural. DEKARU which has peripheral face 24a which carries out the reversal curve of the recording paper 15 in contact with outside 15b of the recording paper 15, and which is a curve side between a rubber roller 22 and the conveyance roller 17 -- the DEKARU roller 24 which is a member is formed The DEKARU roller 24 and the rubber roller 22 constitute the DEKARU means 26.

[0021] When the conveyance roller 17 draws out the recording paper 15 from the recording paper roll 12 on the recording paper 15 and it conveys on it, the frictional force between the roll-sheet electrode holder 13 and the recording paper roll 12 draws out, and they are a load and the so-called back tension F1. It is the back tension F1 by which it generates and the recording paper 15 joins the recording paper 15. It is a back tension F1 to a thermal head 18 side by the ***** conveyance roller 17. Large cash-

drawer force F2 It is pulled out and conveyed Back tension F1 as shown in a rubber roller 22 at drawing 2 (b) at this time It pulls out and is the force F2. Resultant force F3 Periphery section 22a deforms into a shaft 23 side. For deformation of a rubber roller 22, the diameter of a roll of the recording paper roll 12 is large, a weight is large, and the frictional force of the recording paper roll 12 and the roll-sheet electrode holder 13 is the back tension F1 of the recording paper 15 greatly. When large As the solid line of drawing 2 (a) shows, it is large, and on the other hand, the diameter of a roll of the recording paper roll 12 is small, a weight is small, the frictional force of the recording paper roll 12 and the roll-sheet electrode holder 13 is small, and it is the back tension F1 of the recording paper 15. When small As the chain line shows, it is made as [become / small]. Back tension F1 of the recording paper 15 Contact angle theta 1 around which deformation of a rubber roller 22 serves as the maximum, and the recording paper 15 to the DEKARU roller 24 to reverse coils when it is the maximum It becomes the minimum and, on the other hand, is the back tension F1 of the recording paper 15. When it is the minimum, deformation of a rubber roller 22 serves as the minimum, and it is the contact angle theta 2 of the recording paper 15 to the DEKARU roller 24. It is made as [become / the maximum].

[0022] Next, an operation is explained. When the conveyance roller 17 draws out the recording paper 15 from the recording paper roll 12 in the roll-sheet electrode holder 13, it conveys and the diameter of a roll of the recording paper roll 12 is large, although only the large part of the diameter of a roll is small, the weight of the recording paper roll 12 is large, the frictional force of the recording paper roll 12 and the roll-sheet electrode holder 13 is large, and it is the back tension F1 of the recording paper 15, the amount of curl, i.e., the curve degree, of For this reason, the deformation of a rubber roller 22 is large and it is the contact angle theta 1 to the DEKARU roller 24 of the recording paper 15. It becomes small. On the other hand, when the diameter of a roll of the recording paper roll 12 becomes small, the frictional force of the recording paper roll 12 and the roll-sheet electrode holder 13 is small, and it is a back tension F1. It is small. For this reason, the deformation of a rubber roller 22 is small and it is the contact angle theta 2 to the DEKARU roller 24 of the recording paper 15. It becomes large.

[0023] Since cover printing becomes large so that the contact angle theta to the DEKARU roller 24 is large, the DEKARU effect of removing curl of the recording paper 15 has the large diameter of a roll of the recording paper roll 12, and when the amount of curl is small, it is the contact angle theta 1 of the DEKARU roller 24. Even if it is small and the DEKARU effect of the DEKARU roller 24 is small, curl is fully removed. On the contrary, the diameter of a roll of the recording paper roll 12 is small, and when the amount of curl is large, it is the contact angle theta 2 of the DEKARU roller 24. Greatly, the DEKARU effect of the DEKARU roller 24 becomes large, and large curl is removed. For this reason, according to the size of the amount of curl, the DEKARU effect changes suitably, curl is always fully removed, and the recording paper 15 conveyed from the recording paper roll 12 can obtain the recording paper 15 which does not have curl always mostly.

[0024] moreover -- since a rubber roller 22 consists of a sponge member -- a rubber roller 22 -- lightweight -- a member -- an amount is also little, ends and can be made cheap Moreover, since the rubber roller 22 consisted of a conductive member and has connected with a ground, during the roll-sheet electrode holder 13 and the recording paper roll 12, static electricity generated in other frictions is removed by the ground of the main part of equipment of facsimile apparatus 10 through a rubber roller 22, and can remove the fault by static electricity, such as adhesion of the recording paper 15.

[0025] Moreover, since a rubber roller 22 is a roller supported to revolve by the shaft 23 free [rotation], it takes according to delivery of the recording paper 15, and it carries out the surroundings, it rotates, and a rubber roller 22 does not have generating of almost friction between a rubber roller 22 and the recording paper 15, either, and does not have generating of a friction load, either. For this reason, the same DEKARU effect can be acquired by the small load, and the conveyance roller 17 can be driven by the small load.

[0026] Next, it explains per 2nd example of the DEKARU equipment concerning this invention.

Drawing 3 (a) is drawing showing the important section of the claim 1 of this invention, and the DEKARU equipment of five publications, and attaches the same sign to the same composition as the 1st example. The rubber roller 32 of the DEKARU equipment 31 shown in drawing 3 (a) has the outer

diameter D32 of direction center-section of paper width 32a of the recording paper 15 larger than the outer diameter d32 of both-ends 32b, and is the case where the diameter of a roller changed smoothly from center-section 32a to both-ends 32b, and carries out a drum configuration. the cash-drawer force F2 which will pull out the recording paper 15 if this tends to make the diameter of a roller small and tends to acquire a big effect, since the DEKARU effect is so large that the diameter of a roller is small when a roller is used for the DEKARU roller 34. When large, it may bend that the DEKARU roller 34 of a small path seems to be shown in drawing 3 (a), and Siwa may occur on the recording paper 15. In such a case, when the recording paper 15 contacts and turns to a rubber roller 32 by using the rubber roller 32 which has the elasticity from which the diameter of a roller differs in the direction of paper width of the recording paper 15, the recording paper 15 passes along a rubber roller 32 and the DEKARU roll 34, while the tension extended from a center section to an ends side works, and prevents generating which is Siwa of the recording paper 15.

[0027] In addition, in the above-mentioned example, although the case where a rubber roller 32 was a drum configuration was explained, when only the center-section 36a of a rubber roller 36 prepares an elastic member and enlarges the diameter of a roller like the rubber roller 36 shown not only in this but in drawing 3 (b), generating of Siwa by bending of the DEKARU roll 34 can be prevented. Moreover, as shown in drawing 3 (c), the diameter of a roller of a rubber roller of a rubber roller 38 is the same at shaft orientations, and also by making it the easy roller which has length with the roller width of face W38 smaller than the paper width W15 of the recording paper 15, it can acquire the same DEKARU effect and is made thereby still more cheaply.

[0028] Next, other examples of this invention are explained. Drawing 4 -7 are drawing showing one example of the DEKARU equipment concerning the claim 6 of this invention, and they attach the same sign to the same composition as the example shown in drawing 1 by the case where it applies to the Records Department of facsimile apparatus. Drawing 4 and the DEKARU equipment 41 shown in 5 are formed in Records Department 40a of facsimile apparatus 40. Facsimile apparatus 40 is the usual thing except DEKARU equipment 41. DEKARU equipment 41 between shaft-orientations flank 12a of the recording paper roll 12 which counters the flank of the roll-sheet electrode holder 13 which is an attachment component holding the recording paper roll 12 at side-attachment-wall 13a, and side-attachment-wall 13a and side-attachment-wall 13a of the roll-sheet electrode holder 13 a cross-section trapezoidal shape -- the recording paper roll 12 -- a shaft-orientations opposite side -- welding pressure F0 the energization to pressurize -- with the pressure plate 43 which is a member It has KORO 44 which is prepared in the anterior of bottom 13b of the roll-sheet electrode holder 13 possible [the attachment and detachment to bottom 12a of the recording paper roll 12], and has an axial center almost parallel to the recording paper roll 12. KORO 44 has length narrower than the paper width of the recording paper 15, is supported by bottom 13b of the roll-sheet electrode holder 13, and can rotate both ends freely.

[0029] A pressure plate 43 is the back tension F1 at the time of pulling out the recording paper 15 from the roll-sheet electrode holder 13 which holds the recording paper roll 12 by pressurizing flank 12a of the recording paper roll 12. By increasing, KORO 44 contacts the bottom of the recording paper roll 12, and is rotated, and it is the back tension F1 when the diameter of a roll of the recording paper roll 12 is large. It acts so that it may decrease. Between the roll-sheet electrode holder 13 and the conveyance roller 17, the DEKARU roller 24 which is a DEKARU means except curl of the recording paper 15 is formed in the direction downstream of a drawer of the recording paper 15 of the roll-sheet electrode holder 13 in contact with the cylindrical turn roller 45 which it shows to the recording paper 15 in contact with the guide idler 16 which it shows to the conveyance roller 17 side, and the inside of the recording paper 15 in contact with the outside of the recording paper 15, and the outside of the recording paper 15. The turn roller 45, the DEKARU roller 24, a pressure plate 43, and KORO 44 are DEKARU equipment 41 which constitutes the DEKARU means 26.

[0030] Next, back tension F1 by the size of the diameter of a roll of the recording paper roll 12 when the pressure plate 43 and KORO 44 of DEKARU equipment 41 concerning this invention are prepared It explains per change of a size. It sets to drawing 6 (a) and (b), and is the diameter r1 of a roll of the recording paper roll 12 in the roll-sheet electrode holder 13. When large, it is a back tension F1.

Welding pressure F0 of the receiving pressure plate 43 The influence to depend is the diameter r1 of a roll. Since it is large, it is small. Moreover, when the recording paper roll 12 rotates and the recording paper 15 is pulled out, since the recording paper roll 12 is located in the posterior of KORO 44 by KORO 44 which can rotate, as compared with the case where there is no KORO 44, the friction load of bottom 12a of the recording paper roll 12 and the roll-sheet electrode holder 13 becomes small. Back-tension F1 a at this time is shown by following formula **.

[0031]

$F1 A = \mu M r1 + F0 \mu / r 1$ ** -- M is the self-weight of the recording paper roll 12, and μ is coefficient of friction between the recording paper roll 12 and the roll-sheet electrode holder 13 here Moreover, diameter r2 of a roll of the recording paper roll 12 When small, it is the back tension F1 at this time. The big force for overcoming the frictional force the self-weight of the recording paper roll 12 being small, and according to a pressure plate 43, and rotating the recording paper roll 12 will overcome [eye a required hatchet and the recording paper roll 12] KORO 44. Moreover, the frictional force between the recording paper roll 12 corresponding to the cash-drawer load and the front wall of the roll-sheet electrode holder 13 occurs in this case. And back-tension F1 b at this time is shown by following formula **.

[0032]

$F1 B = \mu N r2 + F0 \mu / r 2$ ** -- N is small by the force corresponding to the self-weight here It is a back tension F1 until the diameter of a roll will result into a large shell as the chain line A shows, if the pressure plate 43 and KORO 44 of the invention in this application which show the relation between the size of the diameter of a roll and a back tension F1 (F1 a, F1 b) are prepared in drawing 6 (c). It is F1, when the diameter of a roll becomes small from inside, although it is almost fixed. Acting so that it may increase is a solution or

[0033] On the other hand, the amount of curl of the recording paper 15 when pulling out without letting DEKARU equipment pass and cutting into fixed length the recording paper roll 12 to the recording paper 15 As shown in drawing 7 (a) and (b), the amount of curl when the recording paper 15 curls to an external surface, i.e., printing, side at a convex is set to plus +H, and the amount of curl when curling to an inside side at a convex is subtracted. - If H, coming to be shown in drawing 7 (c) is known experimentally. Since curl of the recording paper roll 12 has the fixed torque which rolls the recording paper roll 12, since the curliness of the recording paper roll 12 is strong and the path to twist is still smaller near the ***** as it becomes, this is because curliness becomes strong still more closely at *****.

[0034] Therefore, when the conveyance roller 17 draws out the recording paper 15 from the recording paper roll 12, If the recording paper 15 from which such an amount of curl changes with the size of the diameter of a roll of the recording paper roll 12 lets the pressure plate 43 which is DEKARU equipment 41 of the invention in this application, KORO 44, the turn roller 45, and the DEKARU roller 24 pass Diameter r1 of a roll of the recording paper roll 12 When large, the amount of curl of the recording paper 15 is small in comparison, and it is a back tension F1. Since it is small in comparison, even if the DEKARU effect of the DEKARU roller 24 is small, it can remove curl. It is the back tension F1 by DEKARU equipment 41 on the other hand although the amount of curl will become large if the diameter r2 of a roll of the recording paper roll 12 becomes small. Since it becomes large, the DEKARU effect of the DEKARU roller 24 becomes large, and can fully remove curl. That is, as shown in drawing 7 (d), the good recording paper 15 which does not almost have curl can be obtained irrespective of the size of the diameter of a roll.

[0035] Drawing 8 -11 are one example which shows the DEKARU equipment of this invention according to claim 7 to 9, and attach the same sign to the same composition as the example shown in drawing 1 . The DEKARU equipment 51 shown in drawing 8 is the example applied to facsimile apparatus 50, DEKARU equipment 51 is contained in the roll-sheet electrode holder 13 of facsimile apparatus 50, and it is formed in the improvement style side in how to pull out the recording paper 15 of the conveyance roller 17 which pulls out the recording paper 15 which curled toward the inside of space from the recording paper roll 12 rolled in the shape of a roll, engages with the recording paper 15, and

has a DEKARU means 52 except curl of the recording paper 15. DEKARU which has the curve side which the DEKARU means 52 is formed [side] in the DEKARU active position P between the turn roller 53 shown inside the recording paper 15, and the turn roller 53 and the conveyance roller 17, and makes the outside of the recording paper 15 reverse the recording paper 15 in contact with outside 15b of the recording paper 15 -- it has the DEKARU roller 54 which is a member the DEKARU roller 54 -- a self-weight or the spring force -- the below-mentioned guide -- it engages with the lower part of the guide long hole 58 of a member 57, and is held at the DEKARU active position P. At this time, the recording paper 15 pulled out with the conveyance roller 17 is made as [form / the fixed DEKARU angle theta shown in drawing 9 (a) centering on the DEKARU roller 54 in contact with the conveyance roller 17 the DEKARU roller 54, and the turn roller 53], and the DEKARU force F acts on the DEKARU roller 54 in the direction of two bisectrices of the DEKARU angle theta corresponding to the drawer force of the conveyance roller 17. A self-weight or spring force of the above-mentioned DEKARU roller 54 is made as [more greatly / than the DEKARU force F].

[0036] As 55 is a DEKARU release means and the DEKARU release means 55 is shown in drawing 8, drawing 9 (a), and (b), it is near the DEKARU means 52. Disc-like base 55a prepared in lower side plate 50A of facsimile apparatus 50 possible [rotation], Lever section 55b which extends [to / near the DEKARU roller 54 / from the periphery section of disk base 55a], the DEKARU roller 54 which point 55c of the shape of a hook of lever section 55b has in the DEKARU active position P when it **** and base 55a rotates -- being engaged -- the DEKARU roller 54 -- the guide of the after-mentioned [active position / DEKARU / P] -- along with a member 57, it can move up. Rotation operation of base 55a of the DEKARU release means 55 is made as [operate / DEKARU operation which the DEKARU roller 54 pulls out the recording paper 15, and is reversed / only at the time of a halt].

[0037] drawing 10 -- setting -- 57 -- a guide -- a member -- it is -- a guide -- the member 57 has the guide long hole 58 which projected below near the DEKARU means 52 from up side plate 50B of facsimile apparatus 50, and was formed in the vertical direction in the shape of [long] S character. Lower 58a of the guide long hole 58 is refracted toward the downstream of the recording paper 15, and the DEKARU roller 54 is formed in the attaching part in which maintenance and secession are possible by the DEKARU active position P. The degree psi of angle of refraction of the refraction direction R of the guide long hole 58 and the direction of the DEKARU force F of joining the DEKARU roller 54 to make is 90 degrees or less, for example, 85 degrees, in the range in which the DEKARU roller 54 can secede from ** in 90 degrees from lower 58a. The case where the degree psi of angle of refraction is 90 degrees is shown in drawing. Up 58b of the guide long hole 58 has the inoperative position Q where the DEKARU roller 54 does not carry out DEKARU operation, and the DEKARU roller 54 is made as [show / from lower 58a to up 58b].

[0038] As shown in drawing 11 near the lower side plate 50A of a before [from the conveyance roller 17 / the DEKARU release means 55], it intervenes between the gear train 59 which connects gearing 17A fixed to the shaft of the conveyance roller 17, and gearing 55A fixed to the shaft of base 55a of the DEKARU release means 55, and this gear train 59, and the clutch 60 which can be intermittent in transfer of the driving force of the gear train 59 is formed. A clutch 60 has the ratchet and solenoid which control rotation of the coil spring which is not illustrated, the gearing connected with the ends of a coil spring, and this gearing, for example, and connection of driving force and interception by the control means which are not illustrated are possible for it. And the conveyance roller 17 drives, in the recording paper 15, at the time of conveyance, a clutch 60 is intercepted, lever section 55b of the DEKARU release means 55 falls below, and the DEKARU roller 54 is located in the DEKARU active position P. At the time of the last of conveyance of the last recording paper 15 for recording the last receiving contents, control means operate, a clutch 60 is connected, and driving force is transmitted to the DEKARU release means 55 from the conveyance roller 17. It is made as [move / the DEKARU roller 54 / point 55c of the DEKARU release means 55 / the DEKARU release means 55 rotates and / from the DEKARU active position P / to the inoperative position Q]. The gear train 59, a clutch 60, and control means constitute the driving force intermittence means 61.

[0039] Next, an operation is explained. the DEKARU equipment 51 of this invention -- the time of

DEKARU operation -- the DEKARU roller 54 -- a guide -- since it is held at the DEKARU active position P of the attaching part of lower 58a of the guide long hole 58 of a member 57, even if tensile force joins the recording paper 15 by normal rotation of the conveyance roller 17 and the backlash by the side of the recording paper roll 12 joins the recording paper 15 with the recording paper roll 12, the DEKARU roller 54 is held at the DEKARU active position P, and its DEKARU angle theta is fixed. For this reason, the recording paper 15 can always hold the fixed DEKARU effect.

[0040] Moreover, since a driving force intermittence means 61 by which it is intermittent in driving force for the DEKARU release means 55 and the DEKARU release means 55 to which the DEKARU roller 54 in the DEKARU active position P is moved with DEKARU equipment 51 is established. If the conveyance roller 17 pulls out the recording paper for the last record of reception and will be in the end state of DEKARU operation. The clutch 60 of the driving force intermittence means 61 is connected, and the DEKARU release means 55 is clockwise rotated with the driving force from the conveyance roller 17. point 55c of the DEKARU release means 55 it secedes from the DEKARU active position P from the DEKARU roller 54 -- making -- a guide -- it shows around along with the guide long hole 58 of a member 57, and is made to move to the inoperative position Q. For this reason, a standby kink is not attached to the recording paper 15, but printing of the 1st recording paper 15 after standby is possible for the good recording paper 15.

[0041] Moreover, since the DEKARU release means 55 is operating with the driving force from the conveyance roller 17, its driving source of exclusive use is unnecessary because of release of the DEKARU roller 54, and can control it to it.

[0042]

[Effect of the Invention] As explained above, according to invention according to claim 1, the always good DEKARU effect can be acquired irrespective of the size of the path of a recording paper roll by using deformation of an elastic member. Moreover, according to invention according to claim 2, it is made to a low cost by using an elastic member as sponge.

[0043] Furthermore, according to invention according to claim 3, static electricity generated when the recording paper is drawn through is removable by making an elastic member into conductivity.

According to invention according to claim 4, a friction load and a cash-drawer load can be reduced by using an elastic member as a roller further again. cover printing when drawing the recording paper through by considering as the roller of a drum configuration further again according to invention according to claim 5 -- members -- a bowl -- it can prevent that Siwa occurs on the recording paper

[0044] According to invention according to claim 6, by preparing an energization member and the koro in the stowage container of a recording paper roll, the cash-drawer load of the recording paper can be adjusted cheaply suitably, and the good DEKARU effect can be acquired further again. According to invention according to claim 7, by establishing a DEKARU release means, a DEKARU member is moved to an inoperative position at the time of a halt of DEKARU operation, and it is made to the good recording paper without the curl of the 1st sheet after standby except for standby **** of the recording paper further again.

[0045] According to invention according to claim 8, even if the tension of the recording paper changes by preparing the guide member to which it shows a DEKARU member, a cover-printing angle can be held uniformly further again. According to invention according to claim 9, the driving source of exclusive use can be made unnecessary further again by establishing a drive intermittence means to transmit and intercept the driving force of a conveyance means.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the whole facsimile apparatus outline front view which applied the 1st example of the DEKARU equipment concerning the claims 1-4 of this invention.

[Drawing 2] It is drawing showing the important section of the DEKARU equipment shown in drawing 1 , and is the front view showing the relation of the force in which (a) joins the outline front view and (b) joins the elastic member.

[Drawing 3] It is drawing showing other examples of the DEKARU equipment concerning this invention, and the important section perspective diagram of the 2nd example of the DEKARU equipment which (a) requires for claims 1 and 5, the important section perspective diagram in which (b) shows other examples, and (c) are the important section perspective diagrams of the example of further others.

[Drawing 4] It is the whole facsimile apparatus outline front view which applied one example of the DEKARU equipment concerning the claim 6 of this invention.

[Drawing 5] It is the perspective diagram showing the bottom section of the facsimile apparatus shown in drawing 4 .

[Drawing 6] Back tension F1 of the DEKARU equipment shown in drawing 5 It is drawing for explaining a size and, for front view when the diameter of a roll of a recording paper roll is large, and (b), front view when the diameter of a roll of a recording paper roll is small, and (c) are [(a)] the back tension F1. It is the graph which shows change.

[Drawing 7] It is drawing showing the difference of the amount of curl of the DEKARU equipment shown in drawing 5 , and the size of the diameter of a roll, and, for (a), front view in case the amount of curl is positive, and (b) are graphs in case a graph in case front view in case the amount of curl is negative, and (c) do not have the DEKARU equipment, and (d) have DEKARU equipment of the invention in this application.

[Drawing 8] It is the whole facsimile apparatus outline front view which applied one example of the DEKARU equipment of this invention according to claim 7.

[Drawing 9] It is drawing showing the important section of the DEKARU equipment shown in drawing 8 , and is the outline front view in which (a) shows the outline front view of the DEKARU release means, and (b) shows the operation.

[Drawing 10] It is the front view showing the guide member of the DEKARU equipment shown in drawing 8 .

[Drawing 11] It is the outline perspective diagram showing the driving force intermittence means of the DEKARU equipment shown in drawing 8 .

[Drawing 12] It is drawing showing conventional DEKARU equipment, and (a) is front view [front view / important section / when the diameter of a roll is small] in which important section front view when the diameter of a roll is large, and (b) are shown, and (c) shows the DEKARU equipment of further others.

[Drawing 13] It is the cross section showing other examples of conventional DEKARU equipment.

[Description of Notations]

11, 31, 41, 51 DEKARU equipment
13 Roll-Sheet Electrode Holder (Attachment Component)
15 Recording Paper
17 Conveyance Roller (Conveyance Means)
22, 32, 36, 38 Rubber roller (elastic member)
23A Axial center
24, 34, 54 DEKARU roller (DEKARU member)
26 52 DEKARU means
43 Pressure Plate
44 Koro
53 Turn Roller
55 DEKARU Release Means
57 Guide -- Member
61 Driving Force Intermittence Means
F0 Welding pressure
F1 Back tension
F DEKARU force
P DEKARU active position
Q Inoperative position

[Translation done.]

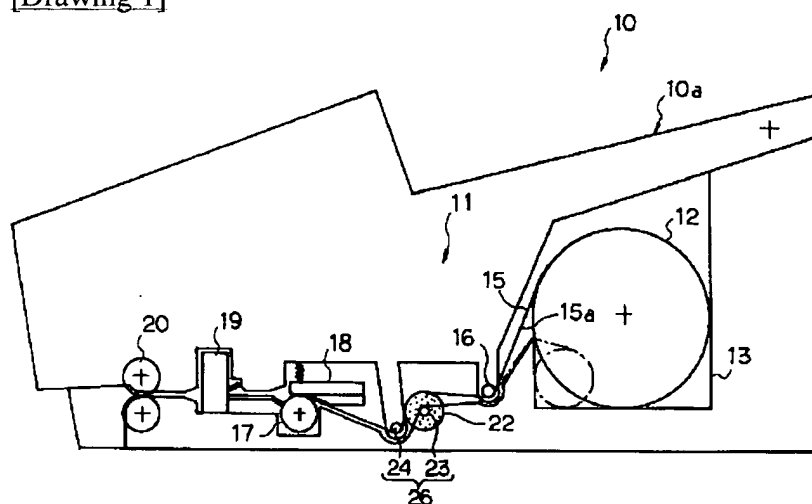
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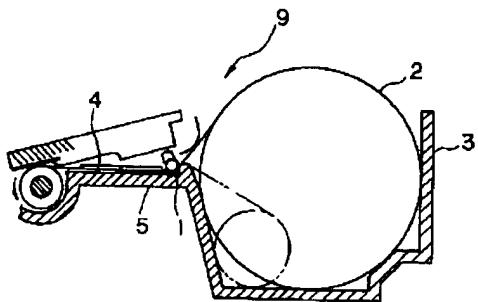
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DRAWINGS

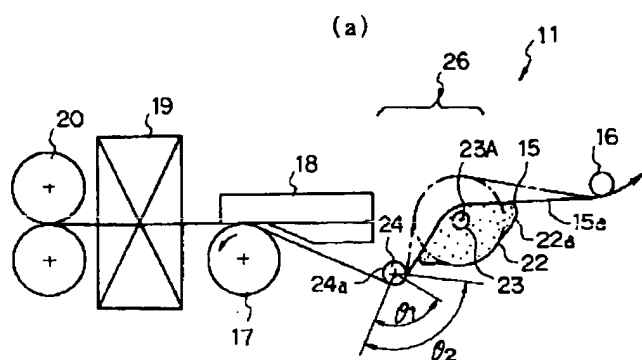
[Drawing 1]



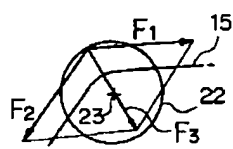
[Drawing 13]



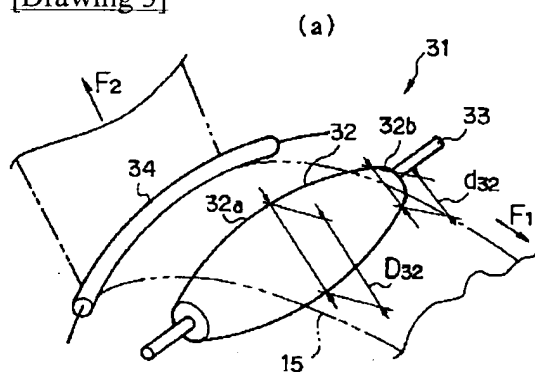
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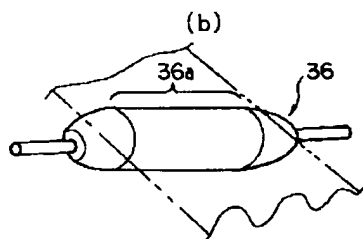
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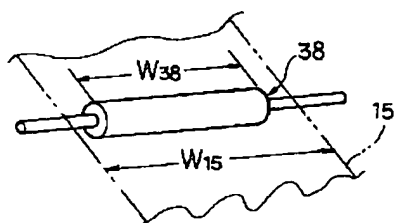
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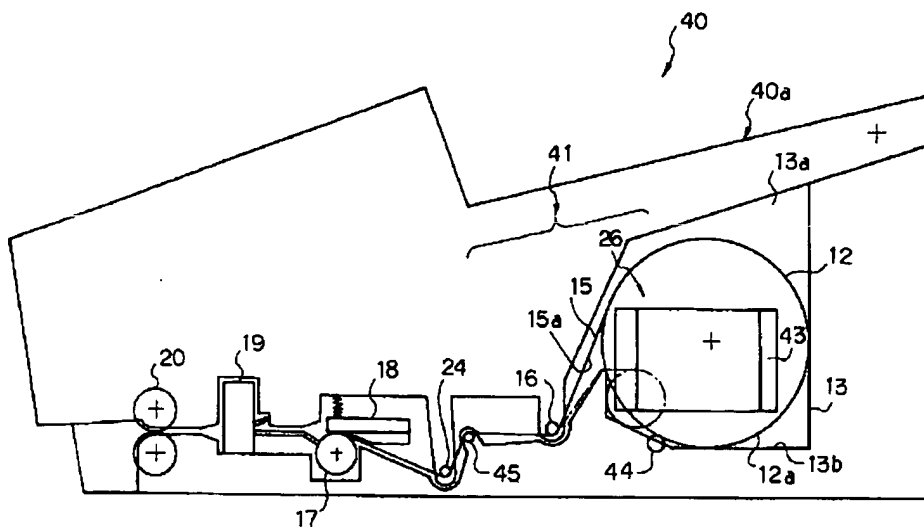
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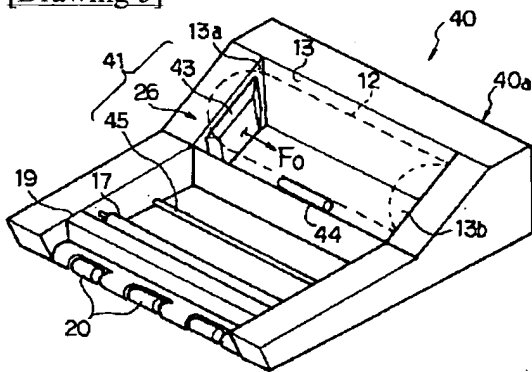
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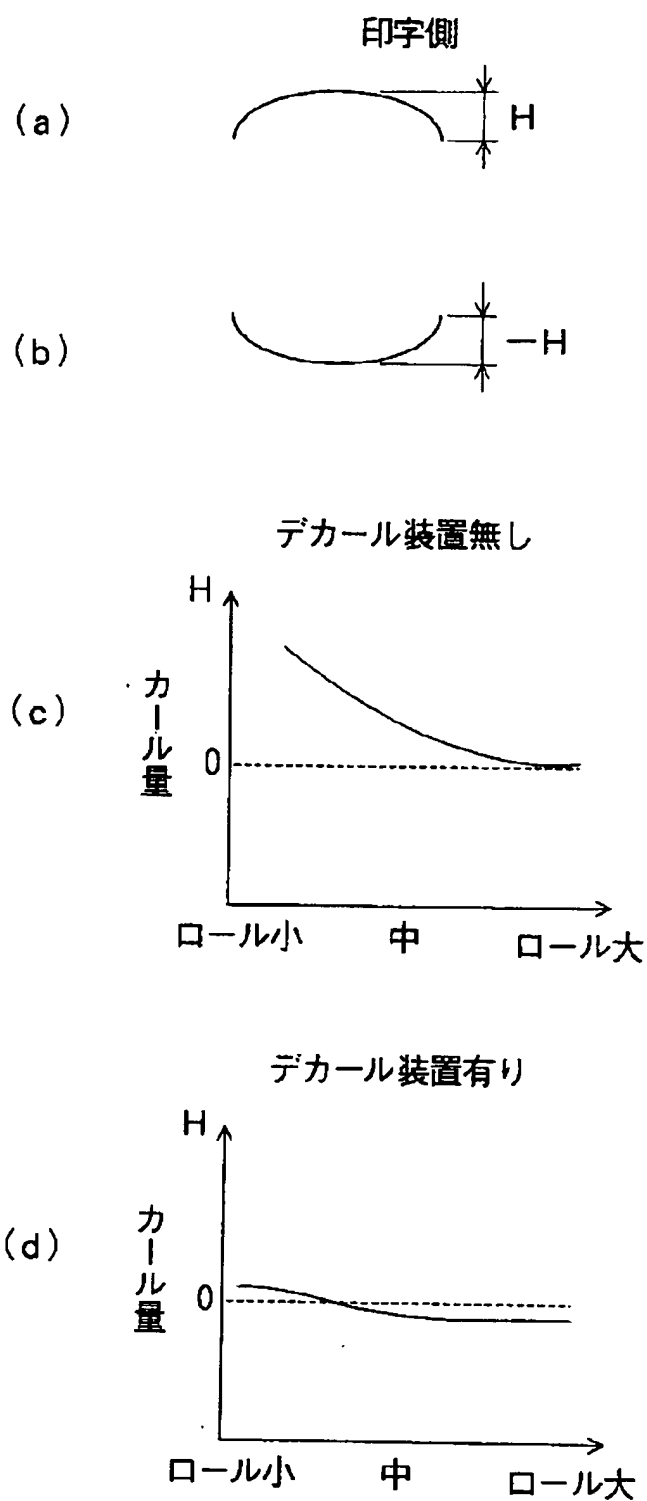
[Drawing 4]



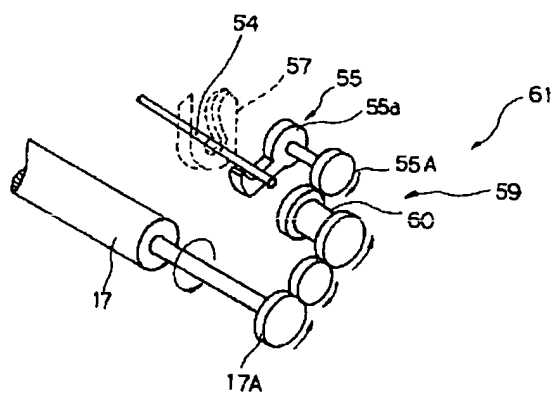
[Drawing 5]



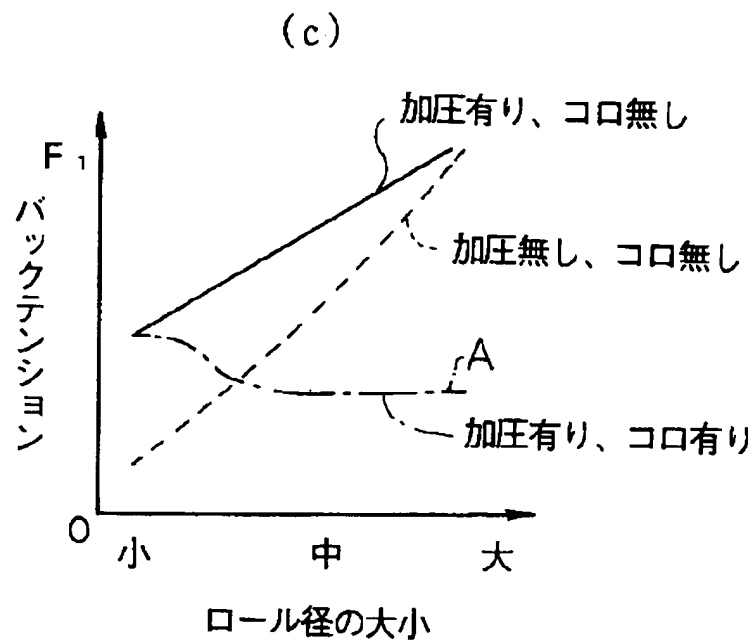
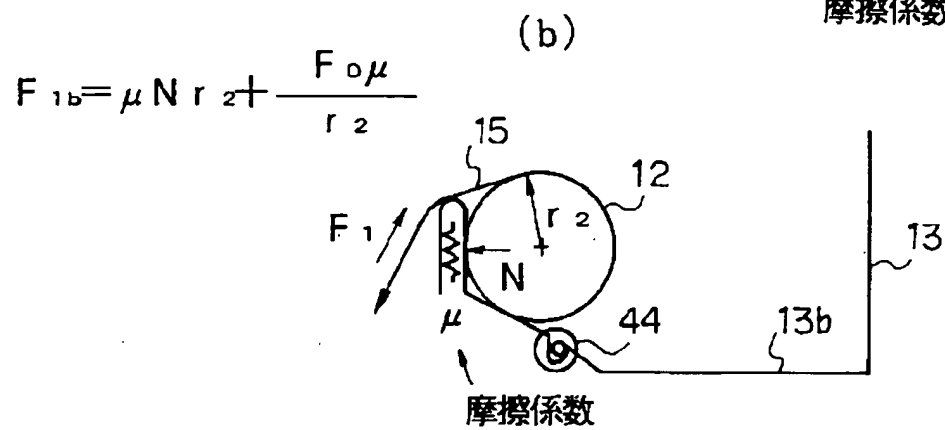
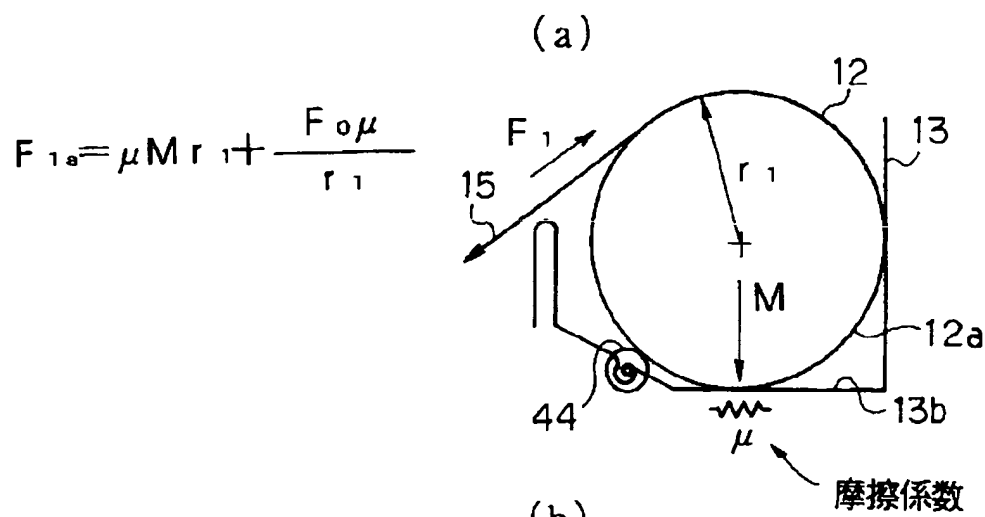
[Drawing 7]



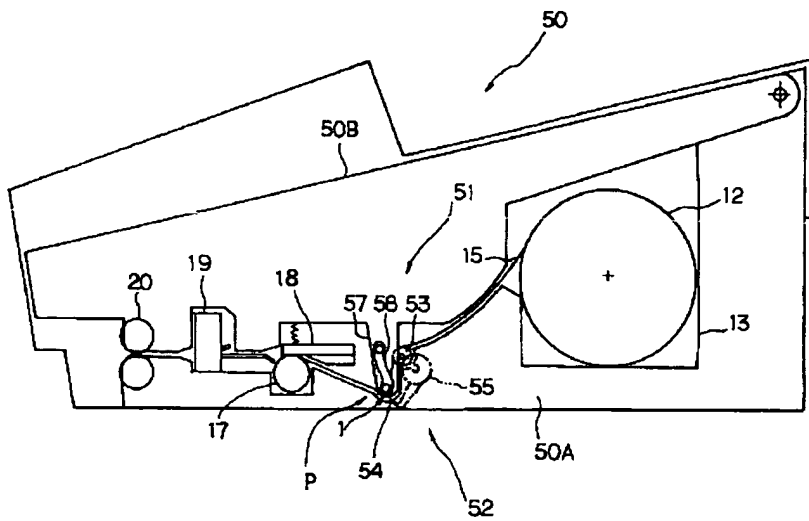
[Drawing 11]



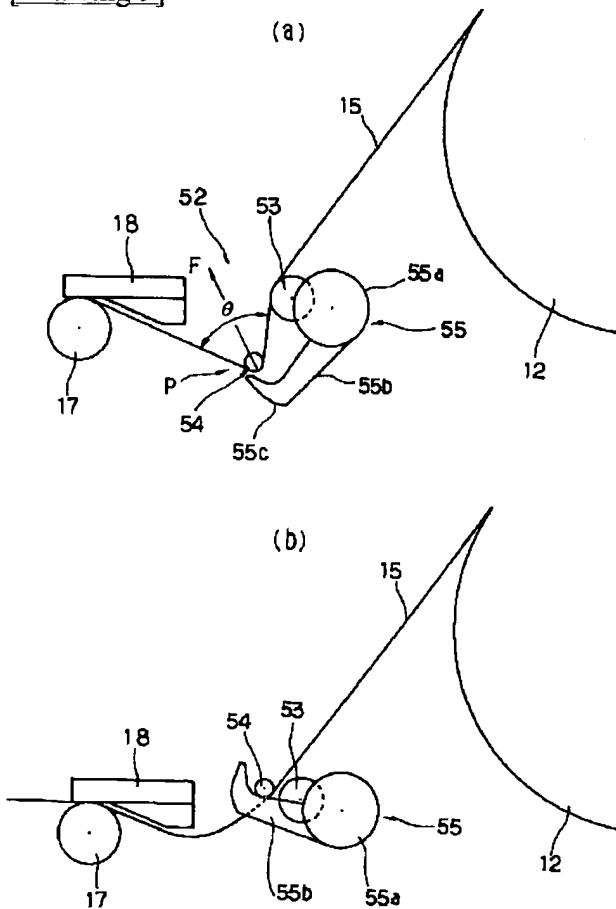
[Drawing 6]



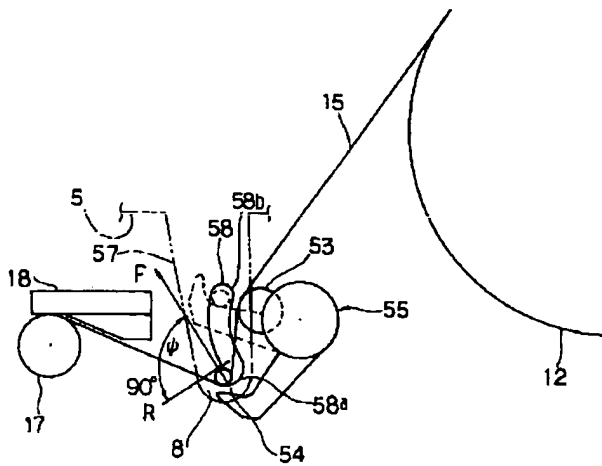
[Drawing 8]



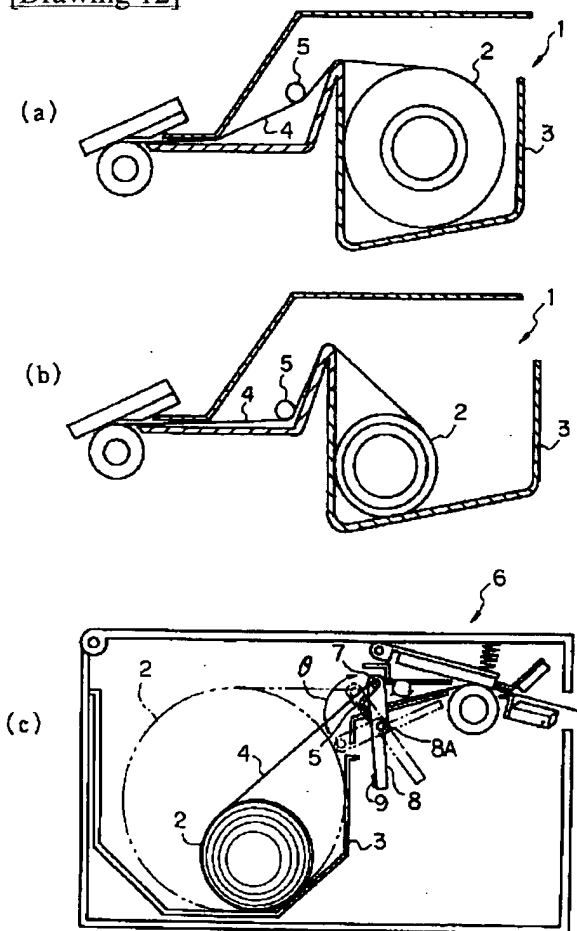
[Drawing 9]



[Drawing 10]



[Drawing 12]



[Translation done.]